

THREATS TO THE AFRICAN BEES AND BEEKEEPING IN ZIMBABWE

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Source: Photo taken at Domboshava Apiculture Centre Apiary 2014



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LIST OF ABBREVIATIONS

AGRITEX.....	Department of Agricultural, Technical and Extension Services.
AOC.....	Api Trade Organizing Committee
APIEXPO.....	Apiculture Exposition
EMA.....	Environmental Management Agency
NGOs.....	Non-governmental Organizations
ZIMASSET.....	Zimbabwe Agenda for Sustainable Social Economic Empowerment

TABLE OF CONTENTS

TOPIC	PAGE
Abstract.....	05
Introduction.....	06
Scarcity and shortage of forage.....	08
Agro chemical poisoning.....	09
Beekeeping practices and traditional attitudes.....	10
Honeybee pests.....	10
Markets and marketing constraints.....	11
Lack of trained personnel and training institutions.....	12
Low adoption levels of new beekeeping technologies.....	12
Disappearance of feral bees (wild bees).....	13
Apiculture strategies.....	14
Recommendations.....	14
Conclusion.....	15
References.....	16

ABSTRACT

The African bee *Apis mellifera* and its subspecies are mostly found in Africa and Europe. However it can also be found in other parts of the world where they were introduced through research work for breeding purposes. Honeybees as pollinators play an important role in the perpetual balance of the ecosystem and beekeeping can be a practical tool for raising the awareness of these communities of the importance of good management of forests and for stimulating conservation, thereby improving biodiversity. Bee keeping has a potential to improve livelihoods for rural population in Zimbabwe because of the high price fetched on both local and international markets. This potential is not realized because of threats posed to both bees and beekeeping. This paper discusses the physical and socio-economic threats to bees and beekeeping in Zimbabwe. This review includes a desktop study of threats in beekeeping and interviews with key informants in AGRITEX, NGOs, associations that have been involved in promoting apiculture in Zimbabwe. The review established that the most common threats include honeybee pests, shortage of bee forage leading to abscondments to areas where bee forage is available. In related to this there is rampant deforestation and uncontrolled forest fires as well as urbanisation. Other serious problems include shortage of credit facility for the beekeeping industry, poor management of bee colonies in dearth periods and chemical poisoning used in Agriculture .In addition to that lack of cooperatives and institutional support for marketing, lack of motivation, lack of skilled manpower and training institutions are other constraints felt by the majority of beekeepers. In-depth understanding of the threats to honey bees and beekeeping in Zimbabwe and the value of honey bee's contribution to the ecosystem and livelihoods therefore people must understand and act on the threats facing honeybees and beekeeping industry. Beekeeping can therefore be considered as a viable and protective measure always to be considered in national developmental programmes and other development strategic planning. The challenges are many but can be overcome while the opportunities are very encouraging

Key words: threats, African bees, beekeeping, deforestation, veld fires

INTRODUCTION

The importance attached to honey dates back to time immemorial as it was highly valued as part of food for the people. Honey was obtained through hunting wild bee nests from which the honey hunters obtained honey but in small quantities enough for local or home consumption. The problem with hunting was ownership over the discovered bee nests. This method of obtaining honey cannot be considered to be beekeeping as there was no element of management through which the development of honey bee colonies should be observed. Honey hunters caused a lot of forest fires as the hunters used open fire to burn the honey bees in order to have access to honey. The glowing splinters of fire used for controlling bees when left on the spot after harvesting honey started forest fires destroying bees and their habitat. Veld fires are reported to have destroyed 100 000ha in 1 week and in 2weeks 300 000 ha were destroyed (Sunday News, 23 August, 2014).

With the rising demand for honey and need for ownership of bee nests, the development of fixed comb hives such as bark and log hives started. As the need for more bee hives in Zimbabwe increased, it resulted in the depletion of huge trees from which the bark was obtained. Number of bark hives in Zimbabwe recorded stood at 67 172(A.O.C Secretariat-Zimbabwe, July 2014) and 25% is replaced every year (Chigere, M, 1995, unpublished) .The use of bark or loghives is considered wasteful as brood and honey can be mixed on one comb. It is impossible to inspect the bee hives and difficult to control the bees when harvesting.

The demand for opening agricultural land for cultivation, need for fuel wood and timber for domestic use leads to deforestation, depriving honey bees of their food resulting in honey bee abscondments. The *Apis mellifera scutellata*, commonly found in Zimbabwe, is highly defensive, coupled with lack of enough protective clothing, proper equipment and accessories retards the development of beekeeping in Zimbabwe. The success in beekeeping depends on the type of bee hives used, management of honey bee colonies, and the presence of forage for the honey bees. This can happen in the absence of

threats to the honey bee colonies and their habitat. The new technologies in beekeeping aim at curbing the threats to the bees and beekeeping through more research and development.

Other constraints that also affect beekeeping in Zimbabwe include pesticide poisoning, lack of skilled manpower and training institutions, low level of technology used, honeybee pests, marketing problems as well as lack of a well-defined policy in apiculture.

Table 1.A sample of major threats of beekeeping in Zimbabwe.

No	Threats	% of threats
1	Shortage of bee forage	22.0
2	Low level of technology used	20.0
3	Lack of skilled manpower and training institutions	13.7
4	Honeybee pests	12.0
5	Pesticides poisoning	10.0
6	Market constrains	9.3
7	Disappearance of feral bees	8.0
8	Other constraints	5.0
	Total	100.0

Source: Survey conduct in Buhera and Goromonzi Districts 2014

Therefore, the overall objective of this paper is to significantly increase the understanding of the threats constraints and opportunities facing the bees and beekeeping in Zimbabwe. It also attempts to identify apicultural research and development interventions that are required in order to make the beekeeping in Zimbabwe more competitive in the domestic and export markets, and thereby improve the livelihoods of smallholder farmers in the country.

FORAGE SCARCITY AND SHORTAGE



Fig1. Forage scarcity leads to honeybee abscondments

Source: An apiary in Domboshava. 2014

In most parts of Zimbabwe forage scarcity and shortage are mainly caused by deforestation, veld fires, urbanization and settlements, absence of well-defined land use policy and high demand for farmlands. This results in people encroaching on land that should be utilized for crops and livestock grazing.

The above anthropogenic activities lead to deforestation, soil loss through erosion and irreparable degradation of land leading to bee forage scarcity or shortage. Burning grass for farmland expansions destroy the undergrowth depriving honey bees of nectar and pollen. Elimination of nectariferous and polleniferous trees or plants makes it difficult to maintain honey bee colonies without feeding them (Kerealem 2005).





Fig2. Deforestation and veld fires negatively affect beekeeping
Source: Photo taken at Simoona Farm in Bindura by M.Chigere 2014

Veld fires destroy feral bees and their habitat, bee hives in apiaries, flora and fauna causing abscondments of honey bee colonies leading to a greater loss in honey production for the beekeeper. In addition to the negative impact of veld fires to honey bees and beekeeping, one of the major causes of deforestation is the demand for fuel wood to cure tobacco.

DETRIMENTAL EFFECT OF AGROCHEMICALS ON BEES AND BEEKEEPING

Honeybee colonies are lost in great numbers through the use of agrochemicals for the control of pests when foraging. Large numbers of bees can be found dead at hive entrances, some carry poisoned pollen to the hives resulting in the losses of brood and young honeybees. Many beekeepers may assume the death of bees found at the hive entrances to have been caused by diseases when it could be a result of pesticide poisoning. In some instances, the bees are poisoned but not killed resulting in the weakening of colonies. In Zimbabwe, the impact of pesticides poisoning to bees has not been researched on and therefore not being talked about as in other countries.

Agrochemicals are assumed to deplete a considerable number of colonies in Zimbabwe during spraying regimes. In that case there can be a conflict



between the beekeeper and the farmer because of loss of honey bee colonies through the use of agrochemicals. Chemicals have never proved friendly to the beekeeper and his bees. During spraying programs for the extermination of tsetse flies and mosquitoes, wild honeybees are also killed while foraging. Generally herbicides are not toxic to bees but they can destroy many flowering plants which should provide honeybees with nectar and pollen. From a beekeepers point of view, more research work must be done to come up with honeybee friendly agro chemicals. This will help to save the life of the world pollinator in Zimbabwe.

Globally agro chemicals have eliminated a considerable number of colonies and Zimbabwe has not been spared as well

TRADITIONAL BEEKEEPING SYSTEMS

The majority of beekeepers in Zimbabwe practice traditional beekeeping through the use of bark or log and other related types of bee hives. This system has been practised for centuries as it was passed from one generation to the other. Beekeeping was initially associated with old men as a means of broadening the family food base. Recently it has generated interest for people of all ages and sexes as an income generating business. Most communal farmers seem to be resisting change from traditional systems to the more profitable and easy to manage systems. This resistance is negatively affecting the upwards growth of the sector as many colonies are destroyed on harvesting traditional hives. At present, beekeeping is perceived as a profit oriented business but in other parts of Zimbabwe some take it as a hobby while others produce for their home consumption and traditional liquors (Personal communication, M. Chigere 1998). The traditional attitudes and perception greatly contribute to stunted growth of beekeeping.

HONEY BEE PESTS

Pests and predators cause a great damage to honey bee colonies within a short space of time. The following are the problem pests and predators in Zimbabwe; Ants (*Hymenoptera*), beetles (Coleoptera) and wax moth (*Galleria mellonella*) pose the greatest nuisance in beekeeping as they because reduction

in honey yields and in some cases abscondments. Bee-eater birds, honey badger (*Mellivora capensis*), spiders are also problem predators and they are difficult to control. In Zimbabwe, no known research has been carried out on honeybee diseases.



Fig3, The honey badger (*Mellivora capensis*) and Hive beetles (*Coleoptera*)
Source: Domboshava Apiculture Centre

MARKETS AND MARKETING CONSTRAINTS

Marketing of honey in Zimbabwe is not organized and therefore buyers purchase honey from beekeepers in comb form. The prices of honey is determined to a certain extent by the quality of combs. One of the challenges is the cost incurred from the market to the point of honey production. Most of honey produced in Zimbabwe comes from the rural areas some of which are in accessible.

In order to facilitate the selling of honey, some NGOs were involved in the buying and selling of honey but after few years collapsed as beekeepers could not produce enough honey to the satisfaction of honey processing plants established. In rural areas, storage facilities lacked and therefore after harvesting the honey, it crystalizes. Crystallization of honey was one of the problems that lead to difficulties in extraction and packaging of honey. There is lack of marketing strategies of honey; therefore the beekeepers only relied on



buyers who pegged their own prices. The other problem is the packaging of honey which does not satisfy the requirements of health standards

LACK OF TRAINED PERSONNEL AND TRAINING INSTITUTIONS

Beekeeping is one of the disciplines that suffered and is being suffering from lack of trained personnel, appropriately skilled trainers, training materials and training institutions in the country. The majority of beekeepers in Zimbabwe lack knowledge of appropriate methods of beekeeping.

Apiculture is taken as secondary activity in colleges and universities and therefore given less time. The beekeepers associations and other beekeeping groupings in Zimbabwe only offer attendance certificates. However, this does not meet the ever-increasing demand of trained personnel in the country.

LOW ADOPTION LEVEL OF NEW BEEKEEPING TECHNOLOGIES IN ZIMBABWE



Fig4. Two AGRITEX staff making Greek basket hives which are detrimental to the environment.

Source: Domboshava Apiculture Centre

New beekeeping technologies introduced to rural communities are not easily taken up because of high costs and not easily available to those who can afford them. Lack of low beekeeping technology centres retards the development of beekeeping resulting in non-availability of basic requirements for beekeeping such as bee kits¹ and carpentry tools for making simple bee hives. The bulk of



beekeepers in Zimbabwe are still lagging behind in the modern beekeeping technologies through which they can control the quality of their honey extracted and beeswax rendered. There are no honey testing centres and laboratories well equipped to test the quality of honey to compete with global markets.



*Fig5, Modern bee hives. The Kenya Top Bar Hive and the Langstroth Frame Hive
Source: Photography by M. Chigere*

DISAPPEARANCE OF FERAL BEES (WILD HONEY BEE COLONIES)

Most of the informants in Agritex, NGOs and associations interviewed on the availability of honeybee colonies to start with indicated that in some areas wild colonies were becoming scarce. Beekeeper beginners were resorting to capturing wild colonies where they found them clustered on a tree branch or stump during the swarming season. This is true in areas where their habitats are increasingly destroyed through agricultural land expansion and the honey bees are also destroyed through the application of agrochemicals for the control of crop pests and diseases.

APICULTURE STRATEGIES

The strategies on Apiculture seem silent when compared with other agricultural sectors in the Ministry of Agriculture, Mechanisation and Irrigation Development. There is need for well-defined strategies in the sector to guide the smooth flow of the business. Apiculture had no development strategies until the introduction of ZIMASSET.



RECOMMENDATIONS

- There is need for education on the impact of deforestation and veld fires on bees and beekeeping.
- Introduction and adoption of appropriate technologies to increase honey production.
- Establishment of apiculture training institutions in Zimbabwe.
- Research on the effect of pesticides on honeybee colonies.
- There should be government strategies for the development of apiculture.
- There should be an apiculture apex council in the country to give guidelines on standards
- Research on bee diseases should be carried out and documented
- Private Public Partnerships should be promoted for the development of apiculture in Zimbabwe

CONCLUSION

The development and success of the beekeeping industry lie on the beekeepers potential to guard against deforestation and veld fires as major threats. The adoption of modern technologies will assist the beekeepers; to a greater extend, to manage theirhoneybee colonies. Government and non-governmental organizations should be involved in the development of apiculture in Zimbabwe.Institutions must offer comprehensive trainings in beekeeping so as to equip beekeepers with relevant techniques in the industry. It is of paramount importance to develop policies in the sector as this will help to monitor standards.

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